

**Response to Office Action Mailed January 13, 2006**

**A. Claims In The Case**

Claims 1-23 have been rejected. Claims 1-23 are pending in the case.

**B. The Claims Are Not Obvious Over The Cited Art Pursuant To 35 U.S.C. § 103(a)**

The Examiner rejected claims 1-3 and 12-23 as being unpatentable over U.S. Patent No. 3,578,245 to Brock (“Brock”). Applicant respectfully disagrees with these rejections.

Claim 1 recites:

1. A water irrigation system, comprising:
  - a computer system;
  - a sensing unit comprising a moisture gauge, wherein the moisture gauge comprises:
    - a collector configured to receive moisture;
    - a flex circuit coupled to the collector, wherein the flex circuit comprises a capacitor, and wherein the capacitor is part of a resonant circuit; and
    - wherein the collector and the flex circuit are configured such that a change in an amount of moisture in the collector alters a frequency of the resonant circuit;
  - wherein the sensing unit is configured to assess an amount of moisture in the collector and provide output that is a function of the amount of moisture in the collector to the computer system; and
  - wherein the computer system is configured to control irrigation of a zone to be irrigated at least partially based on the assessed amount of moisture in the collector.

The Office Action alleges that the features of claim 1 are disclosed in Brock. Applicant respectfully disagrees with the position of the Office Action.

Applicant's claim 1 is directed to a water irrigation system that includes, but is not limited to, a moisture gauge that includes "a collector configured to receive moisture; a flex circuit coupled to the collector, wherein the flex circuit comprises a capacitor, and wherein the capacitor is part of a resonant circuit; and wherein the collector and the flex circuit are configured such that a change in an amount of moisture in the collector alters a frequency of the resonant circuit." With respect to the feature, Applicant's specification states, in part:

Moisture gauge 120 (depicted schematically in FIG. 2) may include a resonant circuit housed in sensing unit 102. In some embodiments, a resonant circuit may include an RC oscillator. The resonant circuit may be designed to detect a presence of moisture in collector 144 or a change in an amount (e.g., depth, volume) of moisture in the collector. A resonant circuit designed to detect a presence of moisture in collector 144 or a change in an amount of moisture in the collector may include, for example, plates of a capacitor positioned around a lower portion of collector 144. In some embodiments, plates of a capacitor (e.g., two copper plates) may be substantially sealed in a flex circuit. FIG. 5 depicts flex circuit 164 wrapped around a lower portion of collector 144 (e.g., just above base 148). Flex circuit 164 may be a plug-in flex circuit.

As moisture is accumulated in collector 144, a dielectric constant between the plates of the capacitor may change, thus changing a frequency of the resonant circuit. A change in frequency of the resonant circuit may be assessed to quantify an amount (e.g., height, volume) of moisture or a change in an amount of moisture in collector 144. For example, a resonant circuit may be designed to sense drops flowing through collector 144. In certain embodiments, a height of moisture in collector 144 may be detected to within about 0.3 cm. Changes in frequency of the resonant circuit may be used by the computer system to assess an amount of moisture received by the zone to be irrigated and/or an evaporation rate of water near or in the zone to be irrigated.

FIG. 7 depicts a schematic of an embodiment of components of moisture gauge 120 coupled to processor 126. Moisture gauge 120 may include capacitor 166 (e.g., in flex circuit 164) designed to detect changes in an amount of moisture in a collector of the moisture gauge. With collector 144 positioned in portion 140 of sensing unit 102, leads from capacitor 166 may be fed through an opening in body 136 of the sensing unit and coupled to other electronic components of moisture gauge 120 (e.g., on a sensor board positioned in the body of the sensing unit). The opening in body 136 through which the leads from capacitor 166 are fed may be substantially sealed such that an interior of sensing unit 102 is not exposed to environmental elements.

(Specification, pg. 25, line 16 - pg. 26, line 15)

Applicant submits that Brooke does not appear to teach or suggest the use of a moisture gauge. The Office Action cites column 5 of Brooke as support for Brooke's teaching of this feature. Applicant, however, was unable to find a reference to a moisture gauge in the cited section. Applicant further submits that Brooke appears to be directed to an electronic water irrigation control system. The irrigation system of Brooke appears to use circuits that have a capacitor in the circuit. Applicant submits, however, that Brooke does not appear to teach or suggest the use of a capacitor in a moisture gauge. Applicant submits that the Office Action has not presented sufficient facts to support the assertion that the cited passage of Brooke contains all of the elements of the claims. The Examiner is respectfully requested to particularly point out where Brooke teaches or suggests the features of Applicant's claimed device.

Applicant submits that Brookes does not appear to teach or suggest all of the features of claim 1. As such, Applicant respectfully request removal of the rejection of claim 1, and the claims dependent from claim 1 (i.e., claims 2-17)

Claim 18 recites:

18. A method of controlling irrigation, comprising:  
assessing an amount of moisture in a collector near or in a zone to be irrigated  
by assessing a frequency of a resonant circuit, wherein the resonant circuit  
comprises a capacitor in a flex circuit, and wherein the flex circuit is  
coupled to the collector; and  
controlling irrigation at least partially based on the assessed amount of  
moisture in the collector.

Applicant submits that the cited art does not appear to teach or suggest all of the features of amended claim 18 for at least the reasons cited above with respect to claim 1. As such, Applicant respectfully request removal of the rejection of claim 18, and the claims dependent from claim 18 (i.e., claims 19-23)

The Examiner has rejected claims 4-9 as being unpatentable over Brock in view of U.S. Patent No. 5,333,785 to Dodds et al. ("Dodds"). For at least the same reasons cited above, Applicant submits that claims 4-9 are allowable over Brock in view of Dodds.

The Examiner has rejected claims 10 and 11 as being unpatentable over Brock in view of U.S. Patent No. 4,998,826 to Wood et al. ("Wood"). For at least the same reasons cited above, Applicant submits that claims 10 and 11 are allowable over Brock in view of Wood.

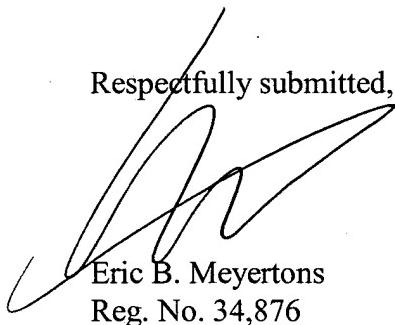
C. Summary

Based on the above, Applicant submits that all claims are now in condition for allowance. Favorable reconsideration is respectfully requested.

Clark, et al.  
10/809,990

If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5853-00507/EBM

Respectfully submitted,



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